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| 09/586,575      | 06/02/2000  | Jennifer Pencis      | 1001-0130           | 6027             |

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EXAMINER

HO, THANG H

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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2188

DATE MAILED: 05/20/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/586,575

Applicant(s)

PENCIS ET AL.

Examiner

Thang H Ho

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,7-9,13-15 and 17-20 is/are rejected.
- 7) ☒ Claim(s) 3-6,10-12 and 16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Amendment*

1. This Office Action is in response to applicant's amendment dated March 5, 2004. The applicant's remarks and amendment were considered with the results that follow.
2. Claims 1-20 are pending in this application for examination. Claims 1 and 19 have been amended, no claim has been cancelled and no new claim has been added. Therefore, claims 1-20 remain pending in the application.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 2, 7-9, 13-15 and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ghaffari et al. (USPN: 6,088,740) in view of Arimilli et al (USPN: 6,487,637), hereinafter Arimilli.

As per claims 1 and 19, Ghaffari teaches in figures 1 and 2 a computer system comprising a processor (121), an integrated circuit (270) receiving command information over a plurality of bit times comprising: a command queue (276) storing command information received into the integrated circuit (270) during consecutive bit times (e.g. column 5, lines 19-23 and column 11, lines 13 et seq.). Ghaffari also teaches the

updating of a write pointer to re-point a write pointer to point to the previous command already stored in command queue allowing recovery of command to restart in event of an error (e.g. abstract, column 2, lines 37-44, and column 17 et seq.).

However, Ghaffari fails to teach the control logic responsive to a cancellation indication in the command information, indicating that the command is cancelled.

Arimilli teaches the control logic responsive to a cancellation indication in the command information, indicating that the command is cancelled to stop the execution of the speculative command and remove it from the queue, thereby speeding up the processing and improving system performance (e.g. Abstract, FIG. 5, column 4, lines 55-61 and column 5, lines 7-20).

Accordingly, it would have been prima facie obvious for one skilled in the art at the time the invention was made to implement the system and method as taught by Ghaffari and include a control logic to process the cancellation of command within the command queue as taught by Arimilli for the purpose stated above. Furthermore, the re-pointing of the write pointer to point to the command already stored in the command queue would allow for the reclamation of command blocks and eliminate the need for compacting the command queue to remove the canceled commands. Thus, providing a contiguous command queue and better system performance.

**As per claims 2, 13 and 14**, the combination of Ghaffari and Arimilli discloses that the command is speculative read operation (Arimilli, Abstract, FIG. 6, column 5, lines 7-20).

**As per claims 7, 8 and 20**, Ghaffari discloses a content counter indicating a number of commands stored in the command buffer (figure 9, element 916 and column 11, lines 13 et seq.) wherein the content counter is decremented as a result of the cancellation indication (figure 13, element 1342 and column 14, lines 20 et seq.).

**As per claims 9, 15, 17 and 18**, the claims encompass the same scope of invention as to that of claims 1, 7 and 8, respectively, however the claims are drafted as method format rather than apparatus format, the claims are therefore rejected for the same reasons as being set forth above.

***Allowable Subject Matter***

5. Claims 3-6, 10-12 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

6. Applicant's arguments filed on March 5, 2004 with respect to claims 1-2, 7-9, 13-15, and 17-20 have been fully considered but they are not persuasive.

Applicants asserted:

- (a) Ghaffari fails to teach "a command queue storing command information received into the integrated circuit during consecutive bit times" as recited in claim 1;

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- (b) Ghaffari fails to teach the “updating of a write pointer to repoint a write pointer to point to the cancelled command already stored in command queue” as recited in claim 1;
- (c) Ghaffari fails to teach “a content counter indicating a number of commands stored in the command buffer” as recited in claim 7;
- (d) Examiner fails to cited any prior art that teaches or suggests “receiving a plurality of command segments corresponding to one command... each command segment being received in a different phase...”; “in response to the cancellation indication, performing an undo-push operation to remove the command segments stored in the command queue associated with the canceled command.”; and “the command being received in command segments at corresponding different times...”.

Examiner respectfully traverses Applicant’s remarks for the following reasons:

With respect to (a), Examiner submits that the primary purpose of a command queue is to store commands, which may be transmitted in serial or parallel over a period of time for later execution. Ghaffari clearly discloses a Command Queuing System (270) for storing command information received into in a hardware accelerated Command Interpreter (CI) for “**seriatim**” execution by components within the CI system to perform tasks such as the writing of data to a magnetic disk storage device (e.g., column 1, line 45 through column 2, line 43). Furthermore, Ghaffari discloses on column 5, lines 19-43 that the preferred command queuing schemes comprising First-in-First-out (FIFO), wherein commands are sequentially stored and retrieved during consecutive bit times.

With respect to (b), Ghaffari discloses that in the event of an error in executing any one command from the command queue, the command queue system updates (e.g., repoints) the command queue pointers as needed to recover from the error and restart or reset to an initial start state and resume the normal command queuing (e.g., column 2, lines 39-43 and column 16, lines 20-21). However, Ghaffari does not specifically teach that the updating of the pointers is in response to a cancelled command. Arimilli teaches that a control logic responsive to a cancellation indication in the command information, indicating that the command is cancelled to stop the execution of the speculative command, thereby speeding up the processing and improving system performance (e.g. Abstract, FIG. 5, column 4, lines 55-61 and column 5, lines 7-20). Accordingly, it would have been obvious for one skilled in the art at the time the invention was made to extend the error handling mechanism in Ghaffari's invention to include the cancellation command as taught by Arimilli to speed up the processing and improving system performance.

With respect to (c), Ghaffari clearly discloses a content counter indicating a number of commands stored in the command buffer (e.g., "ToDo count bits represent the number of un-executed commands in the Command Queue 276 that are awaiting execution."; see FIG. 9 and column 12, lines 34-36).

With respect to (d), the limitations have been addressed above with respect to (a). Additionally, it is noted that the citations "command segment being received in a different phase" and "the command being received in command segments at corresponding different times..." are being interpreted as being analogous to the citation

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“command received during consecutive bit times” as being recited in claim 1. Regarding the undo-push operation to remove the cancelled command from the queue, it is inherent that the cancelled (e.g., deleted) commands are removed from the queue as evident by Arimilli on column 1, lines 61-64).

Therefore, the rejection of claims 1-2, 7-9, 13-15, and 17-20 is deemed to be proper.



***Conclusion***

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thang H Ho whose telephone number is 703-305-1888. The examiner can normally be reached on Monday-Friday from 7:00 A.M. - 4:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on 703-306-2903. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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9. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thang Ho  
Art Unit 2188  
May 17, 2004

*Mano Padmanabhan*  
5/17/04

**MANO PADMANABHAN**  
**SUPERVISORY PATENT EXAMINER**